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SOME NOTES ON BOVINE SURGERY*

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There is no doubt that an annual exodus of the Veterinary Medical Association of Ireland to the Provinces should be welcomed by members in the country who are unable to attend many of the Association's meetings in Dublin. This mobility makes for better contact, the cultivation of *esprit de corps*, a breaking down of the barriers of isolation and a more common understanding and co-operation, which is urgently needed in these doubtful times.

To make provincial meetings a success, however, the southern members should not be sparing of their presence or help and should conquer that inferiority complex from which the profession seems to suffer, and give us something in cold print occasionally—subject matter for which the many opportunities of country practice amply provide. Example, however, is better than preaching, so when asked by Mr. Cussen, my co-Secretary of the Munster Veterinary Inspectors' Association, to fill the gap, I agreed with diffidence and beg to offer these few notes on bovine surgery, which may be of some interest to those of us who have to practise among the "lowing kine." It will be generally admitted that the bovine is a good surgical subject. Healing takes place satisfactorily, notwithstanding the fact that operations have sometimes to be performed in surroundings anything but ideal and that after-treatment, in similar environment, may not be what one would desire; yet the good power of resistance to sepsis, and energetic wound regeneration of the species, often give surprising results.

This is particularly noticeable in the large cavity and wound left after removal of an extensive tuberculous tumour, for when complete healing has taken place it is often difficult to discover the scar. To illustrate this, some time ago I removed two enormous pre-scapular tumours from a cross-bred Hereford cow. The one on the right shoulder weighed 10-lbs. and the one on the left 12-lbs., yet healing took place normally and but that one knew of the operation, it would be difficult to detect cicatrix. It is not often, however, that one meets with two such large tumours in the same subject, though enormous single pre-scapular lesions are often encountered.

The common operable sites of the enlarged tuberculous lymphatics which we are asked to remove are in the pre-scapular (or shoulder), submaxillary (or jaw), pre-crural (or flank) and parotid (or ear) regions. Extensive abscess enlargement of the posterior aspect of the thigh is also frequently met with, but beyond opening low down and draining (a debatable procedure), these lesions are often better left alone. They are too deep and embedded in muscle for safe or complete surgical removal. They are the tomb of the attacking leucocytes and the tuberculous invaders of the popliteal gland and, like the tomb of Tut-ankh-amen, rash interference may be unlucky for the patient and the operator. Opening and draining tuberculous abscess tumours in the other positions indicated is, in my experience, futile. One may be tempted, by a certain feeling of ripeness, to lance and drain and thus earn an easy fee, but the removal of the abscess *in toto* and without breaking, if possible, is the only treatment I have found satisfactory. It should be obvious, also, that the mere opening of a tuberculous abscess gland allows infective material to escape, often for a considerable time, and even should the lesion close, future suppuration is likely to take place and develop into a more or less intermittent case of open tuberculosis. A good motto for the practitioner to remember is that "an empty house is better than a bad tenant," and although there may be a little trouble in the eviction, no heirs or executors of a tuberculous tenant should be left in possession. The difficulty of removing tumours, in the commoner positions indicated, varies according to site and the amount of adhesion present.

PRE-SCAPULAR, OR SHOULDER TUMOUR

Pre-scapular tumours are probably the least difficult to remove, especially if a free subcutaneous movement is present. A straight, bold incision is made through the skin, after clipping and disinfection, following the long axis of the gland and of sufficient length to allow plenty of operative movement and removal of the lesion intact. The tumour being covered by muscle, this is now divided to correspond with the skin incision. A few light, steady strokes are used, so that the tumour, which is often abscessed, is not punctured. Two nerves will be seen at this stage, running across the lower third of the lesion, and

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it is as well to divide them at once, together with an unimportant associated vessel; sensation is thereby destroyed, retraction takes place and they give no further trouble. The lesion proper should then be visible, whitish in colour, and is found to be covered by some layers, or envelopes, of connective tissue. It is well to distinguish the innermost, or true capsule, and, during the operation, to keep as close to this as possible, which makes enucleation much easier. It is advantageous to use the forefinger for breaking down adhesions and to guide the knife. A long curved probe-pointed bistoury is useful, when tissue too strong or deep for the finger is encountered, always endeavouring to keep the flat of the knife as close to the true covering as one can. This important rule applies to the removal of all tuberculous tumours, as it helps one to avoid the unnecessary wounding of healthy tissue and blood vessels and tends to make the removal of the lesion less difficult.

I usually begin towards the top, or apex, of the tumour, working and freeing downwards, until it is attached only by the inside tissue, towards the base. Pressure, at this stage, or earlier, will usually pop the growth out of its bed and the operation is completed by twisting off. This torsion seals what seems to be the principal blood supply to the growth, the vessels being embedded in the tissue attachments near the base. Some judgment is required to select approximately the final vascular attachments to be subjected to torsion. These tumours, on removal, often bear a striking resemblance to the head of a calf. Three or four sutures are inserted into the uppermost part of the wound only, leaving plenty of space unsutured at the lower border, for dressing and drainage. Sometimes one meets with a pre-scapular tumour which may be strongly adherent from a previous subcutaneous inflammation, with associated smaller glands, below its inferior border and running into the jugular-carotid region. Extirpation may then develop into a major operation. Little separation can be carried out with the finger, the knife having to be used to a great extent, with consequent hæmorrhage, difficult to locate. Great care must be taken in removing the smaller tumours in the carotid region, otherwise the operation may finish in a barrel of doubtful corned beef, or another mound in the domestic cemetery.

As a practical suture, I can thoroughly recommend a substance called macramé twine, which can be obtained from fancy stores in large balls, of different colours. I spotted and pinched my first ball from the domestic work basket and since I made the discovery my annual bill for suture material has become considerably reduced. It is cheap, smooth and surprisingly strong, and will be found an excellent outside suture, used with a suitable needle, having an eye large enough to admit of easy threading. I submit a sample for your inspection.

SUBMAXILLARY LYMPHATIC, OR TUMOUR OF THE JAW

Tuberculous enlargement in the submaxillary region is frequently met with, and the difficulty of operation varies according to the amount of fibrous tissue and adhesion present.

A superimposed abscess is often found covering the gland proper and an amount of white fibrous tissue may envelop the whole lesion. Operation is then more difficult and, in the healing process, fibrous proliferation may fill the cavity and mar the result, especially if a small portion of the lesion is left, which is sometimes difficult to avoid. Tumours in this position, which can be clearly palpated, seem round and moveable, are not difficult to remove and the result is usually satisfactory.

I removed two such glands recently, from a pure-bred shorthorn cow and, seen lately, there was no sign of scar or enlargement to indicate previous disease or operation. In young bulls, of the Hereford or polled-Angus breed, or in coarse-necked animals generally, post-operative fibrous proliferation is sometimes difficult to check. By suturing the wound deeply and tightly, so that the walls approximate, and at the same time providing for ample drainage, one may, to a considerable extent, bring about healing by first intention and thus prevent new growth, where such is feared; otherwise, the wound is better left open, unless extensive.

PAROTID, OR EAR TUMOUR

Tumours of the parotid lymphatic, which appear under the ear, are less common and can usually be removed satisfactorily, by blunt bistoury and separation with the finger. There is a deep blood vessel here, which one must try to avoid, by keeping close to the true tumour capsule. If opened, it had better be taken up and tied, during, or immediately after, the operation; or, failing to secure, the cavity should be tightly packed and sutured, or an ordinary darning needle passed deeply through the wound edges, which are then approximated, by a figure-of-eight ligature, round the needle. Care should be taken to follow this tumour well up under the ear, where it forms a sharp apex; otherwise a portion may be left, which may start a new growth and prevent healing.

PRE-CRURAL, OR FLANK TUMOUR

This is usually non-adherent and easily removed. It is a good plan to tie the tail to the opposite hock and so prevent flicking and contamination. Sutures may be left out, unless the wound is large, and then insert high up only, at the same time making sure that too much pocket does not exist at the base of the wound.

As a matter of fact, this precaution applies to all these gland extirpations. The tumour is submuscular and embedded in tissues, which are extremely sensitive.

TRAUMATIC TUMOURS IN THE SAME POSITION

Sometimes considerable enlargement, other than tuberculous, is met with in the region of the flank. Traumatism, such as horning, is a frequent cause.

After making sure that hernia does not exist, it will be found good practice to cast and make an opening at the bottom, sufficiently large to admit the hand. After the fluid has escaped, exploration will usually reveal the presence of a mass of broken-down tissue, or jelly-like material, which is best removed by the hand or large curette, and with subsequent antiseptic flushings a satisfactory result may be expected. Tapping, or small incisions, I have not found of much use; the complete removal of the imprisoned material seems to be necessary. Similar contents are usually found in the large dropsical knees of cows, known aptly in some parts of the country as "bale knee," which seems to be the bovine prototype of "housemaid's knee." Here, also, a bold dependent incision, with evacuation of the spongy contents, will be found the best procedure, not forgetting, of course, the removal of the cause. A pad and bandage over the floppy, post-operative knee skin and above the incision, helps to retard further fluid secretion and to bring about adhesion of the secretory lining.

SNORING—PHARYNGEAL GLAND

I have not included this in the operable sites, but as the trouble is fairly prevalent, a reference to it is admissible.

Snoring is caused, in probably 90 per cent. of the cases, by tuberculous enlargement of the pharyngeal glands. The trouble is usually bi-lateral, and, by downward pressure on the larynx, its lumen is altered and reduced and the free curvature of the breathing passage interfered with. This can sometimes be proved by pressing the larynx upwards, when the noise is either reduced or disappears. The glands, unless considerably enlarged, are not visible externally, but can generally be felt by pressing, simultaneously, the finger tips of both hands behind and under the jaws and over the pharyngeal region. Detection may be important, from a medico-legal aspect, as sometimes cattle bought at fairs or sales and escaping notice at the time, may be found to be snorers on arriving home, and may become the subject of litigation. I have known of yearling bulls purchased at sales (and I regret to say, in some cases, with a sound certificate chart) to have become snorers in a short time. I am here tempted to ask the following questions: What is to prevent a bull, that has failed to pass the test, from being offered at a sale as *untested*? I have frequently known of such cases and big prices to have been obtained. Is there something wrong with the system? Is there to be no control? And can we blame a breeder for not "telling the world"? Should blank duplicate certificate forms be issued, only by a recognised department, who should subsequently receive a duplicate copy of each test and thereby be put in possession of some means of identification and control, should they wish to exert it? There seems to me to be considerable room for improvement under the heads indicated.

The snoring glands, as they may be termed, sometimes break down into abscess, when occasionally relief may follow, by lancing inside through the mouth gag. I have occasionally removed pharyngeal abscess from the outside, in selected cases, where separation by the finger can be done for the most part; then, by puncturing, to cause collapse of the capsule, it has been removed through the necessarily restricted operation wound. The result has been more permanent and satisfactory.

HERNIA

Traumatic rupture of the abdominal wall, in the flank region, is occasionally met with. Grave symptoms of strangulation are often present, with fatal result.

I consider I was fortunate in my last case of this. The patient was a good young cow, with a circumscribed rupture about the size of two large fists, in the flank, which outside pressure had failed to reduce. General symptoms of strangulation were present. Having seen, in the *Record*, of some successful laparotomy operations for reduction of bowel invagination, or gut tie, in cattle, I decided to try the experiment rather than the humane killer. The animal being cast and chloroformed, an incision, as for rig operation, was made in front of the hip, through which the disinfected hand and arm were passed downwards and the abdominal rent located. This was found to exert too much pressure to allow of safe traction, so a knife had to be carried down to enlarge. By outside manipulation, and traction from inside, it was possible to draw the bowel back, after which the flank wound was sutured in the usual sections. The skin was then gathered up tightly over the abdominal rent and two sharpened bicycle spokes were pushed through it, at right-angles, close to the body wall. Several rounds of stretched catapult rubber were then wound between the crossed spokes and the abdominal wall, as in the operation for umbilical hernia. I had not very much hope; however, the strangulation did not recur and the cow eventually recovered, with a flank swelling, through which the hardened abdominal rent could be distinguished and which, for the present, at any rate, does not seem to give any trouble.

CUTANEOUS TUBERCULOSIS

Subcutaneous, or pseudo-tuberculous tumours, on the limbs and other parts are fairly common. The centres usually contain thick pus, with adherent skin. Their complete removal, if multiple, is troublesome and not always satisfactory. Opening, curetting and plugging with disinfectants or caustics will sometimes have the desired effect.

In dealing with above tuberculous extirpations, I refer only to selected cases. Obviously, it would be useless to operate on the subject with chronic cough, or symptoms of generalised tuberculosis. From an economic point of view, the operations mentioned are generally satisfactory and there is no doubt that, in many cases, the animals improve considerably in condition. These tumours are nature's "S.O.S.," and if the surgeon acts thoroughly and in time, the danger of a general infection is lessened or entirely prevented. Each practitioner has probably his own method of after-treatment and favourite dressing, but it is good practice to advise a thorough cleansing of all blood clot from the wound on the next day.

I find the following an excellent dressing, in the shape of an ointment, composed of iodoform 5i, ol eucalyptus 5ii, acid boric 5iij and vaseline, ad, ℥iv to ℥vi. It clings in the wound a long time and so saves time (by less frequent dressings) and counteracts possible neglect, which may occur on a busy farm.

Frequent douching, with salt solution, is also effective and has the advantage of being cheap. Disinfectants can be used as required. As regards anæsthetics, I find a local anæsthetic generally sufficient.

MAMMITIS

I would like to refer to a recent treatment for this bugbear of the profession, which probably some members have already tried. I allude to the injection, by means of a hypodermic syringe, with 2½ or 3-inch needle, of a preparation called Parenchymatol-silver albumen' (an acridine derivative with silver albumen), deep into the substance, or parenchyma, of the inflamed quarter, or quarters, and in quantities up to 100 c.c. Having tried many treatments externally, *per os*, hypodermically and *via* the teat, with varying success, it always struck me that if an active, non-irritant, non-toxic substance could be injected directly into the infected and inflamed udder substance, a better result than that given by other treatments may be expected. In other words, one gets direct to the seat of war, heretofore securely masked by the impregnable walls of udder tissue. I therefore jumped at parenchymatol as a possible expression of my idea. It has been tried in several cases, both in streptococcic and the more serious staphylococcic infections and the results have been distinctly satisfactory. It was noted that the septic inflammation became more quickly subdued, followed by reduction of induration and enlargement and the return of normal milk, in a good percentage of cases, where the most to be expected heretofore was a resolution of sorts and a definitely defunct quarter. Considerable venous hæmorrhage sometimes follows the operation, but this comes away, by frequent milking, together with pus and débris, and need not cause alarm; in fact, it may act beneficially by reducing pressure in the engorged mammary vessels.

To show that the preparation is undoubtedly active, I may quote the case of a valuable greyhound, which developed an enormous tense swelling of the thigh, from hip to hock, with extreme prostration and evidence of toxæmia. The dog's dam died twelve months previously, from a similar swelling, terminating in gas gangrene, which was also expected in this case. Prognosis was grave; however, as an experiment, 5 c.c. of parenchymatol was injected in several places, deeply into the muscles. In 24 hours there was a most encouraging improvement; the swelling had lessened by more than half and with subsequent treatment, the dog made a good recovery, though lameness persisted for a considerable time. I quote this case, although not in the realm of bovine surgery, to show that the preparation is active and may have a great field of usefulness in certain cases of localised septic inflammation.

There are many other bovine operations to which I would like to refer, but I think your patience has been sufficiently exhausted.

ETIOLOGY OF "CANINE HYSTERIA"

Mr. H. D. Walston, of King's College, Cambridge, in a letter published in the August 12th issue of *Nature*, states that some evidence has been collected indicating a connection between so-called canine hysteria and vitamin A deficiency coupled with a substance ("E-substance") occurring in dog biscuits and other cereals.

Fifty-four cases of dogs suffering from hysteria were investigated. Of these, all except one were fed on a preponderatingly cereal diet: 26 of these, continuing on the same diet, remained hysterical, while 28, the diet of which was changed to contain more vitamin A, recovered.

"In the absence of quantitative data," proceeds Mr. Walston, "it is not possible to assess the exact pharmacological ratio of vitamin A: E-substance.

"The recent work of Mellanby, in which dogs were fed on a cereal diet deficient in vitamin A, is suggestive; symptoms closely resembling canine hysteria were aggravated by the addition of wheat germ.

"Mellanby's work, taken in conjunction with the similarity of symptoms, treatment and cure of convulsive ergotism and canine hysteria, make it possible that the cause of the two is the same, or closely allied.

"Further work is in progress."

EXCRETION OF *MYCOBACTERIUM TUBERCULOSIS* IN THE MILK OF A COW WITH AN APPARENTLY NORMAL UDDER

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From time to time cases have been recorded of cows which have been found to be excreting the tubercle bacterium in their milk without any *ante-* or *post-mortem* evidence of tuberculous lesions in the mammary gland.

One of the authors (S. H. G.) some years ago met with such an instance, but it was not placed on record. The cow was one of a herd of 40 supplying milk to a children's hospital. At one of the routine biological tests of a bulk sample the guinea-pigs became tuberculous, and by a further series of biological tests the contamination was traced to a cow which was considered to be the best in the herd. On slaughter, no trace of any lesion could be found by careful macroscopic examination of the tissues of the udder and supramammary lymph gland, but the mesenteric glands were badly diseased and numerous tuberculous ulcers were present in that portion of the small intestine from which the diseased mesenteric glands drew their lymph. No other lesions were found in the body.

The case now to be placed on record is of special interest in that the cow concerned was shown to have been passing tubercle bacteria from an apparently normal udder for a period of about six months.

Biological Examinations of the Cow's Milk.

On March 14th, 1932, a sample of milk was received from six cows. This sample was of the "mixed direct" variety; that is to say, some of the milk of each cow was drawn aseptically direct into the sterile container in which the sample was despatched to the laboratory. This sample (No. 2,641) was centrifuged in the usual way, and injected subcutaneously into the thigh of each of two guinea-pigs (Nos. 428 and 482). Six weeks later when the guinea-pigs were killed, No. 428 was found unaffected, but No. 482 showed tuberculous lesions in the precrural and sublumbar lymph glands. Acid-fast organisms were present in the lesions. The sample was reported as positive on April 26th, 1932.

On April 28th, 1932, a mixed direct sample of milk was received from five of the six cows. This sample (No. 2,824) was used in the same way for the inoculation of two guinea-pigs (Nos. 895 and 883). In the sixth week following inoculation both guinea-pigs were killed and found each to have only the precrural gland affected, and in each case only a small caseous centre in the gland. Acid-fast organisms indistinguishable from *M. tuberculosis* were present in the lesions, and the sample was reported as positive on June 7th, 1932.

On June 14th, 1932, two group samples (Nos. 2,990 and 2,991) from the original six cows were received, each consisting of the milk of three cows. Each of these was injected into two guinea-pigs as before. The guinea-pigs (Nos. 194 and 107) from sample 2,991 were free of lesions when killed in their sixth week following inoculation, but those (Nos. 147 and 112) from sample 2,990 each showed a local abscess, and lesions in the precrural and sublumbar glands. Acid-fast organisms were found in these lesions. Sample 2,990 was reported positive on July 21st, 1932.

On July 27th, 1932, an individual sample (No. 3,123) was received from one of the three cows of sample 2,990, and was used for the biological test upon two guinea-pigs (Nos. 401 and 406). These guinea-pigs were killed in their sixth week and both found to be tuberculous. No. 401 showed lesions in the popliteal, inguinal and sublumbar glands. No. 406 showed a local abscess and the inguinal and sublumbar glands were enlarged. Acid-fast organisms were found in the lesions. Sample 3,123 was reported as positive on September 6th, 1932. The diagnosis of tuberculosis in these two guinea-pigs was confirmed by inoculation of another guinea-pig with material from their lesions, extensive tuberculous lesions resulting in six weeks.

On September 8th, 1932, the veterinary officer re-examined the cow, but there was no clinical evidence of disease. Tubercle bacteria were, however, found in dried sputum from the wall in front of the cow.

Post-mortem Lesions in the Cow.

On September 20th, 1932, the cow was slaughtered under the Tuberculosis Order. Extensive caseating lesions of tuberculosis were found in the lungs. The mesenteric glands were tuberculous, pus being found in two of them. One kidney showed tuberculous lesions. No lesions were found macroscopically either in the udder or supramammary lymphatic glands, and this was confirmed by the writers after careful macroscopic examination of these tissues when they were received at the laboratory. There was nothing about the appearance of these tissues which would guide one in the selection of portions of tissue for further examination.

Histological Examination of the Udder and Supramammary Glands.

Four pieces of udder tissue and four pieces of supramammary gland were selected at random for the preparation of microscope sections. All four pieces of udder tissue shewed perfectly normal appearances when stained and mounted. One of the blocks of supramammary gland tissue,

however, gave sections showing the typical histological appearances of a tuberculous lesion, though no acid-fast organisms could be found in appropriately stained sections. The other three blocks of supramammary gland were normal.

Biological Examination of Udder and Supramammary Gland Tissue.

Pieces of udder tissue were selected at random in aseptic fashion and ground in a mortar into an emulsion with sterile saline. Two guinea-pigs were inoculated with this emulsion subcutaneously inside the thigh and on being killed at the end of nearly three months after inoculation were found to be free of lesions of tuberculosis.

The supramammary gland had been well sliced with a knife for macroscopic examination, and for the biological examination special care was taken to avoid outside contamination. At that time the histological picture of tuberculosis in the gland had not been revealed as the pieces for section were taken at the same time as those for the biological test. The tissue pieces for inoculation were well washed and dried, then dipped momentarily into boiling water to sterilise the surface. The centres of the pieces were then enucleated, ground in saline in a mortar and the emulsion used to inoculate two guinea-pigs (Nos. 878 and 894). Both guinea-pigs developed lesions of tuberculosis within six weeks.

From the data given above, it seems reasonable to conclude that this cow was responsible for all the positive biological test results of the group of cows. This would have been more conclusive if individual samples from the other two cows in sample 2,990 had been examined biologically, but there was no clinical evidence at the time, nor has there been any report since, that either of these two were tuberculous. It therefore appears that this cow was secreting tubercle bacteria in her milk for a period of nearly six months without showing any clinical evidence of tuberculous lesions in the udder or any evidence of udder infection on *post-mortem* examination. One cannot rule out the possibility, or probability, of the presence of microscopic lesions of tuberculosis in the udder tissue, lesions which would only be detectable were it possible to examine the whole of the udder tissue by microscope section or biological test.

At present ships' holds are not so constructed as to prevent leakage of carbon dioxide gas; but in the future engineering practice may reasonably be expected to co-operate with laboratory theory, and then Australian and New Zealand beef and pork should reach this country merely chilled instead of frozen. Gas storage can also be successfully applied to many English products, and at a not very remote date the idea of there being a season for particular fruits and delicacies may strike us as very primitive and pre-scientific. —*The Times.*

BRUCELLA ABORTUS IN COW'S MILK

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In the course of the routine examination of mixed direct samples of cow's milk by the biological test for tuberculosis, observations have been made upon a number of the guinea-pigs with a view to determining the presence in them of *Brucella abortus* infection derived from the milk.

Agglutination Tests.

The procedure has been to withdraw blood from the heart of the guinea-pigs immediately after death in the lethal chamber in the sixth week following inoculation of milk sediment. The blood was allowed to clot and the serum in dilutions of 1:20, 1:40, and 1:80 was tested by the macroscopic method against a suspension of *Br. abortus*.

It has not been found possible to examine in this way more than a small proportion of the samples of milk submitted to the biological test for tuberculosis. Those examined were simply a random collection, the only rule followed being that all the samples tested must be from those in which both of the guinea-pigs had lived for the prescribed observation period following inoculation.

This article is a record of 200 samples tested, representing observations on 400 guinea-pigs, with the following results:—

Number of samples in which both guinea-pigs were negative	=	113, or 56·5%
Number of samples in which both guinea-pigs were positive	=	52, or 26·0%
Number of samples in which only one guinea-pig was positive	=	35, or 17·5%
Total positive samples	=	87, or 43·5%

In judging the agglutination test of the guinea-pigs' sera it was found in the vast majority of cases that if agglutination occurred at all a serum dilution of 1:80 gave a clearly positive result. In some cases, however, sedimentation and clearing in the 1:40 tube was present with partial sedimentation and clearing in the 1:80 tube, this being accepted as a positive result. Agglutination has not been observed in the serum of healthy guinea-pigs tested with *Br. abortus*.

Splenic Enlargement in Inoculated Guinea-pigs.

There were in all 139 guinea-pigs positive to the agglutination test and records were kept as to the condition of the spleen in each of these. In eight cases the spleens were affected with tuberculous lesions but in the remaining 122 the following was noted:—

Number of positive agglutination guinea-pigs showing normal spleens ...	=	83
Number of positive agglutination guinea-pigs showing enlarged spleens ...	=	48

In *post-mortem* examinations of 261 guinea-pigs which were negative to the agglutination test there were found twelve enlarged spleens in which the enlargment was not due to tuberculosis.

It would appear from the above observations that macroscopic observation of the spleen of inoculated guinea-pigs is not to be relied upon as an indication of the presence or absence of *Br. abortus* infection.

Cultural Tests.

From the first 41 of the 200 samples referred to, cultures were made from the spleen of each guinea-pig, *i.e.*, 82 guinea-pigs in all. Cultures were not made from the remaining 159 samples. The culture medium used was liver-agar in an atmosphere of 10 per cent. CO_2. Colonies with the general characters of *Br. abortus* were picked off at any period of incubation up to one week, re-sown, and the resulting growth tested by the agglutination test against a known positive *Br. abortus* antiserum prepared from rabbits. Agglutination with a serum dilution of 1:800 occurred on all our suspected cultures and was accepted as proof that the growth was *Br. abortus*.

The following results were obtained:—

Number of samples in which spleen cultures were made ... ... =	41
Number of samples in which positive results were obtained ... ... =	9
Number of samples showing positive cultural and positive agglutination results ... ... =	8
Number of samples showing positive cultural and negative agglutination results ... ... =	1
Number of samples showing negative cultural and positive agglutination results ... ... =	10
Number of samples showing negative cultural and negative agglutination results ... ... =	22

The interest in these figures lies in the fact that, as shown by one guinea-pig, it is possible for a guinea-pig to harbour *Br. abortus* and yet possess no agglutinins in its blood serum, rare though this circumstance probably is. This is parallel to what is known to occur occasionally in cows.

At the annual general meeting of the Alnwick and District Cart Horse Society (Northumberland) it was reported that the season just closed had been the most satisfactory which the Society had had for a number of years, and the increased interest which had been shown last year had been continued. The number of foals the Society had had this spring was 42, and the financial statement showed a balance in hand of £150.

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Export certificates issued recently by the National Pig Breeders' Association show that Italy is again a buyer of Large and Middle Whites, France and Poland of Large Whites, Japan of Berkshires and Middle Whites, whilst Berkshires have also been sent to Australia and the Argentine.

Clinical Communications

SOME ABDOMINAL CASES

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Invagination of the Cæcum in a Cow

Subject.—A barren cow in milk, and in bare condition. Seen by me on July 20th: had then been ill for two days, with inappetence, disposition to spend most of her time on the ground, loss of milk and infrequent passage of a small quantity of dark-coloured fæces. Symptoms noted, in addition to the above, were disinclination to take either food or water, conjunctival membranes pallid, pulse small and rather slow, temperature about normal, abdomen somewhat tympanitic, the passage of a small quantity of fæces apparently evenly mixed with dark blood, rectum practically empty; little or no exhibition of pain on manipulation, but while standing the merest suggestion of kicking at the belly. A further abnormality was a bulging in the lower right flank, appreciated the more by comparison with a pregnant cow in the adjoining stall. Intussusception was considered the likely cause, and death in a few days the likely termination.

The animal had been given linseed oil before being seen by me: I prescribed opiates and quantities of nourishing gruel and, in addition, small doses of perchloride of iron.

She lived for another five days, generally recumbent; two or three times she was noted to be chewing the cud. The tympany increased, but with the passage on the fourth and fifth days of a quantity of fluid fæces, though of normal colour, with apparently no blood.

Post-mortem.—The cæcum was found invaginated for a length of about nine inches. There were no adhesions, but the point of the cæcum showed commencing gangrene, and the mesenteric vessels at the spot were engorged.

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Twist of the Bowel in a Mare

On the afternoon of July 4th I was asked to see a twelve-year-old cob mare. She had been found down and in pain that morning and had been given two or three drenches of various kinds. Twist was suspected. She lived a further 24 hours. On opening the abdomen after death a very small rupture of the mesentery was found, through which a short length of the small gut had passed and twisted upon itself in such a fashion that it was not easy to unravel.

The point of interest in this case is the history of a fall on the road about June 20th: she was suffering from "broken knees" at the time of her death, and it was further stated that she had seemed dull for some days. It is probable that the rupture occurred at the time of the fall, but the fatal effects of the twist were not produced for about a fortnight.

Hydrops Amnii in a Cow

Subject.—A cow almost due to calve her second calf.

When seen she was down and unable to rise; her abdomen was excessively distended, her bodily condition poor. Vaginal exploration revealed that one could introduce the tip of a finger into the cervix. A trocar and canula inserted into the left flank drained off a big quantity of a pale, clear fluid. The cow was left lying comfortably, eating hay. It was hoped that it would be found possible to calve her within a day or two and the owner was asked to send word of any noticeable change in her condition. She was reported to be apparently normal the following day, but two days later she was found dead in the field, the abdomen in the meantime having become as distended as before. No examination was made of the carcass, but it appeared probable that a second drainage and the delivery of the calf on the day before death might have saved her.

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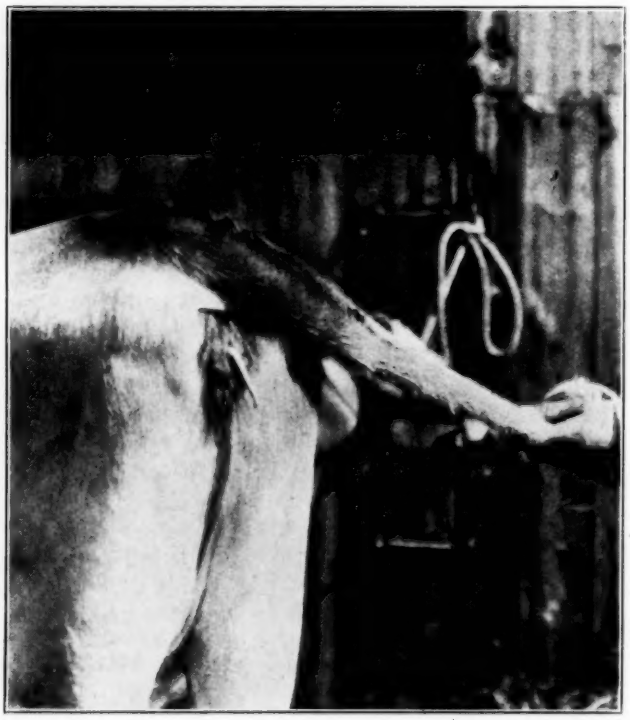
AN INTERESTING HERMAPHRODITE

F. L. GOOCH, F.R.C.V.S.
Stamford

On June 28th, 1933, I was summoned to attend a pure-bred Guernsey heifer stated to be constantly leaping the other heifers and to have something peculiar at the vulva.

On arrival I found a heifer, born August 13th, 1932, in a grass field, and she was then leaping a companion heifer. I had her brought into a shed and upon examining the vulva I found a penis-like appendage hanging about three inches outside the labia of the vulva; upon further examination I found it was attached about six inches inside the vagina on the upper surface. During the time I was examining, the heifer micturated, and I thought urine was passed from the end of this body but I was not able to make certain of this. Immediately the heifer had finished urinating, however, she was able to move the appendage in an upward direction.



I gave no definite opinion but said I would see the animal again in a few days. I examined again on July 8th, and then informed the owner that, in my opinion, the heifer would be useless for breeding purposes and advised selling for veal as, in my view, it would not be economic to keep her until old enough for beef, and the owner readily agreed.

I was able to sell the heifer to a butcher in the town and therefore had a good chance of making a complete *post-mortem*.

The heifer was slaughtered on August 1st and I was present from the beginning and was able to dissect away all the generative organs complete and bring them to my surgery.

Autopsy revealed the uterus complete with normal ovaries. On examining the appendage I found a canal, into which I could get a small probe, and this canal passed along the roof of the vagina to the meatus urinarius, but I could find no opening into the urethral canal.

All the female organs of generation being complete and quite normal, except for the appendage, the question arises, would this animal ever have been able to become pregnant?

* * * * *

NAIL EMBEDDED IN HORSE'S SOLE*

MAJOR R. HAYES, M.R.C.V.S.
Sherburn-in-Elmet, Yorks.

A client, living some two miles away, sent a horse to the blacksmith's, on account of slight lameness, to have the foot searched. As the search revealed nothing, I was called in, but, on arrival, about an hour later, the first symptoms had become considerably aggravated—the horse was very lame, in much pain, commencing to sweat and showed a temperature of 104°F. Further search of the foot by me revealed little more. Palpation on the inside of the thigh was responded to by flinching (or so I thought), and I made a provisional diagnosis of impending lymphangitis, adopting the usual treatment for this condition, *viz.*, physic, fever medicines, anodyne liniments and fomentations. In about three hours the horse appeared much easier. Next morning I visited the animal again and found him apparently normal and walking sound, so that he was shod and sent to work. Some three months later, the horse was due for re-shoeing, and on removing the old shoe, the sole dropped out with it and disclosed a six-inch wire nail embedded in it, a new sole having grown underneath. The horse was shod and returned to work.

* Case Report forwarded by Captain F. C. Scott, M.R.C.V.S., Divisional Representative of the Yorkshire Division, N.V.M.A.

Abstracts

[Sterility. Disc. Sect. Comp. Med., Roy. Soc. Med., *Proceedings*. 1933. xxvi. 9. pp. 1183-1209.*]

Mr. John Hammond, of the School of Agriculture, Cambridge, in introducing the subject, made special reference to the genetic causes of sterility. The factors which reduced litter size in multiparous species were the same as those which caused sterility in species normally uniparous. Mr. Hammond's observations were largely directed to the influences productive of variation in the three main phases of the reproductive process by which fertility was controlled, *viz.*: (1) the number of ova shed; (2) the number of ova fertilised; and (3) the number of fertilised ova which developed up to the time of birth. A disturbance of the chromosome complex, as in mules, prevented fertilisation. Fœtal atrophy was a recessive character and was one of the main causes of lowered fertility on in-breeding.

Mr. A. S. Parkes, D.SC., discussed sterility in relation to endocrine deficiency. Confining his remarks to the endocrine organs directly concerned with the reproductive processes—the reproductive organs and the pituitary body—he examined first the endocrine factors involved in the general co-ordination of the reproductive processes. Changes in the accessory organs of reproduction were controlled by hormones produced by the gonads, and these in turn were controlled by the anterior lobe of the pituitary. The part played by the ovaries during pregnancy was in dispute, but he could vouch for the importance of the ovary during gestation in the mouse, at least. As to the endocrine factors involved in parturition, Dr. Philip Smith's experiments had shown that parturition might be quite normal in the complete absence of the posterior pituitary lobe, and it therefore appeared that the posterior lobe substance which stimulated uterine contraction was not essential for normal delivery.

Professor V. Korenchevsky illustrated both local and general causation of sterility by infection of the uterus and under-nourishment and vitamin deficiency respectively. He summarised the results he had attained by experiments on male rats kept for varying periods on a diet deficient in either vitamin A or vitamin E, detailing the histological changes seen in the testes, which were similar on both diets. The sterility of males fed on a deficiency of these vitamins was explained by these degenerative changes.

Mr. J. T. Edwards, D.SC., M.R.C.V.S., of the Lister Institute, stated that the diseases of reproduction, including sterility, were now exercising the attention of breeders and veterinarians almost more than any other problems with which they had to contend in our domesticated animals.

In the light of present-day knowledge, the causes of sterility might be classed as follows: (1) genetic; (2) functional, (*a*) endocrinal, (*b*) nutritional; and (3) infectious, but that was a departure from the classification usually given by veterinary writers, the prevailing impression being that sterility was commonly the result of recognisable disease of the genital tract, the consequence of bacterial infection, which had invaded the tract from the outside world.

The view that the chief cause of sterility in our larger animals was some form of infection was supported by the fact that the very prevalent equine and bovine abortion were, in the majority of cases, the result of specific infections. The reproductive diseases for which these infections were responsible, however, had been linked etiologically by the clinician in a manner offensive to the good sense of the bacteriologist.

During the past 30 years there had flourished certain schools of veterinary thought which had advocated different methods of treatment based on the particular views or assumptions they had favoured in regard to the origin of multiple sterility common among animals, and the tenets of these Mr. Edwards now proceeded to examine.

The infectious vaginitis school, for a long time powerfully represented on the Continent, had to contend with the objection that the incidence of nodular vaginitis was high amongst cattle where reproductive trouble was not of unusual prominence, and, in regard to its alleged infectivity, that it was no more common amongst herds affected with sterility than amongst those which were not affected; whilst the teachings of the Swiss school, that the primary seat of abnormalities in the genital tract was the ovaries, had been chiefly useful as directing attention to the functions of the sex glands.

Coming to the Danish school, Mr. Edwards stated that, having failed to achieve satisfactory results in practice from the application of the Swiss method of treatment for sterility, Albrechtsen, a veterinary practitioner at Bornholm, came to the conclusion (1906) that this condition was primarily the result of an endometritis. These results were communicated to the International Veterinary Congress, at the Hague, in 1909, and thereafter gained a wide publicity. The defect in the Albrechtsen viewpoint was that the endometritis was taken as an accomplished fact in sterility, and therapeutic treatment, as a sufficient intervention, was directed at this fact, without persevering

* It may be mentioned that the *Proceedings* of this Section may be obtained separately from the publishers (John Bale, Sons and Danielsson), price 2s., by those interested.

enquiry further into the ultimate origins of the observed endometritis, the bacterial flora in the discharge being either sparse or banal.

Finally, the Williams, U.S.A. school, apart from the widely-contested assertion that the uterus harbours a bacterial flora, contributed a theory termed " the pathology of reproduction " which usefully laid stress on the importance of lowered resistance as a cause of sterility and suggested that that factor might be transmitted to the next generation.

Mr. Edwards proceeded by an analysis of some findings recorded by workers in different parts of the world, upon animals maintained in different conditions, to ascertain the part played by infectious disease. From this aspect of the problem he discussed (1) equine and (2) bovine sterility, with informative sections on the relative importance of the male as a factor, on the relationship between contagious abortion and sterility in the cow, and on venereally-transmitted infection in the equine and bovine species.

Some veterinary authorities thought that whatever caused abortion caused sterility, but the fact was that when there was an outbreak of abortion in a herd, sterility was usually not high at first but increased as the epidemic proceeded, and the evidence suggested that it was caused by another, concomitant, infection. In Germany the importance of maintenance and feeding as a means of controlling sterility had recently been given increasingly greater emphasis; if an animal was living under unhygienic conditions it was impossible, it was held, to guarantee normal endocrine functioning. Among housed animals fed on imported foodstuffs, as in the Danish herds, sterility was high and endometritis common and severe; in New Zealand, where there was plenty of lush grass, sterility was low and endometritis mild. The endometritis, which was undoubtedly to be found in a large proportion of cases of sterility, seemed to be the outcome usually of defective involution of the genital tract, favouring excessive multiplication of micro-organisms that in natural conditions were mostly banal, but in conditions of faulty nutrition and maintenance of a herd might become raised, by frequent " passage," to the status of pathogenic invaders. Hence, sterility had attained its commanding position during the last 30 years or so, with the notable change in the mode of keeping cattle, especially dairy cattle and pedigree stock, for intensive production.

W. B.

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[Feeding in Relation to Sterility in Cattle. Stewart, W. A. (1933). *Jl. Ministry Agric.*, xl, 5, 463-466.]

This short review, which is contributed for the benefit of the agricultural public by the Principal of the Moulton Farm Institute, Northampton, as a section of the Notes on Feeding in the August number of the *Journal of the Ministry of Agriculture and Fisheries*, has come for notice opportunely, following upon the publication of the recent Discussion on Sterility at the meeting of the Comparative Section of the Royal Society of Medicine, which has been briefly summarised above. Mr. Stewart's elementary disquisition, which is based mainly on the common observations of breeders and veterinarians, is rather strikingly in concordance with the inferences that will be drawn by the careful reader from the searching analyses, mainly of experimental and laboratory findings, contributed by the specialist biologists in the Discussion. Stock breeders throughout the country, he says, are much concerned about the serious loss arising from sterility in cattle. The increase in this condition, in this country and elsewhere, is due in no small measure to improper methods of feeding and management. The modern cow is often treated more as a milking machine than as a breeding animal. Heavy-milking cows breed only with difficulty until late in lactation and sometimes prove permanently barren. Both under-feeding and over-feeding may be contributory causes.

Certain soils, or the herbage grown on these soils, may be responsible. Some observers blame an insufficiency of calcium and phosphorus; Pugh (1924) has said that sterility is more prevalent on clay soils than on chalk or limestone formations. The nature of the subsoil and the treatment of the land with fertilisers have, however, upon the composition of the herbage, a determining influence that tends to mask the effect of particular types of soil. Absence of iodine seems to have been definitely associated with sterility.

In the so-called " Weidener disease " or " hunger sterility," which occurs enzoötically in certain parts of Germany, the cows abort or give birth to weakly calves, and often fail to breed again: the feeding of cod-liver oil, liming the land, and general improvement of the fertility of the soil give beneficial results in treatment. The view is now gaining ground that balanced manuring of the soil is the most effective way of ensuring a supply of the necessary mineral matter to stock.

In the well-known practice of " flushing," which aims at bringing on œstrus and multiple ovulation, the ewes are changed to a higher plane of nutrition immediately before tupping. As an illustration, Mr. Stewart mentions a recent incident, admittedly not in the nature of a controlled experiment, at his farm institute. A flock of Dorset Horn ewes had been taking the ram normally well until they were shorn. Then, for a fortnight, none came in season. As early lambs were wanted, the ewes, which were

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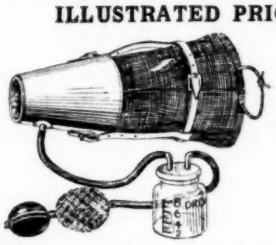

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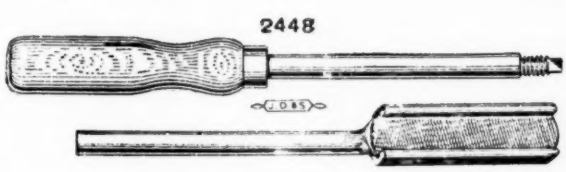

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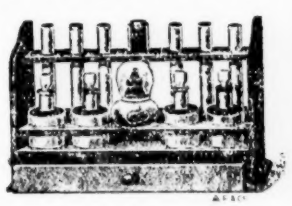

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grazing, in June, on a drought-stricken permanent pasture, were given a supplementary protein-rich diet consisting of a quarter-of-a-pound a head each day of soya treacle nuts. Within four days the ewes began to come into season, and by the end of a fortnight nearly all the ewes had been served.

In parts of the New Forest, Tutt (1933) has observed that delayed œstrus has been rectified in both cattle and mares by turning them on to richer pastures. An amount of protein that is excessive and fed over a long period may induce, on the other hand, infertility in milking cows, and very badly balanced rations seem to be dangerous. The general feeding and management of young dairy heifers are important, as is reflected by the custom of Dairy Shorthorn breeders of discouraging the showing of young heifers on the grounds that to feed them heavily for show purposes would have a serious effect upon their subsequent breeding and milking capacities. This precaution, however, is not regarded as important by specialists in two other breeds. Probably, in a given set of conditions, performance is, to some extent, governed by the breed of the heifer. Skill in management, as in giving much regular exercise to a show heifer, may perhaps mitigate the injurious effects of heavy feeding. Certain simple suggestions are finally made with reference to appropriate methods of breeding, feeding and maintenance of ordinary dairy heifers.

* * * * *

[**Sterility in Dairy Cattle.** Hammond, J. (1933). *Official Handbook of the Central Council of Milk Recording Societies of England and Wales,* May, 1933 (Reprint, 4 pp., 2 figs.).]

Recent studies (reported by Sanders, Conference of Agricultural Organisers, Cambridge, July, 1931) on the wastage of cows in the dairy herds of milk recording societies in the eastern counties, show that the average life of the milking cow in any one herd is only four-and-a-half years; and of the cows which leave the herds about 25 per cent. go out because of sterility.

The majority of queries from farmers on sterility in cattle come in from about October to February, and in herds where trouble has occurred it mostly disappears naturally in May and June. This is also shown by actual figures taken from milk recording societies' books (as reported by Marshall and Hammond, Fertility and Animal Breeding, Bull. 39, *Minist. Agric. and Fish.,* 1932); from over 5,000 cows entered in the books of the Essex, Norfolk, North Somerset and Penrith Societies, the results shown in table at foot were obtained.

The causes for the delay in getting cows in calf during the autumn and summer months are probably two-fold: in the first place, lack of exercise and going on to dry food are not conducive to regular breeding, and, secondly, it seems possible, by analogy with experiments which have been done recently with ferrets, that the ripening of the egg is delayed by the shortening of the hours of daylight, just as fowls lay fewer eggs in autumn unless they are lighted and fed high protein food with salts.

In the case of the bull, the production of sperm has no relation to the desire for, or power of, mating, and a bull may be quite normal in these respects but still be sterile. Over-fatness and lack of exercise in old bulls and underfeeding and over-use in young bulls are among the main causes of lack of sperm. Feeds high in protein, and a hard, rough condition with exercise and access to green feed are the best things to keep a bull fit.

About four out of five cows can be cured by proper treatment, as briefly described in the paper. Treatment, however, requires the services of a skilled veterinary surgeon, and a plea is finally put in for the provision of funds to undertake extended research and to give special facilities for training veterinary students in the subject.

J. T. E.

* * * * *

[**A Diphtheroid Organism showing Acid-fast Properties in Milk Smears.** Martinaglia, G. (1932). *J. S. Africa. Vet. Med. Ass.* III (part 4) 4 pages (3 refs.) 2 figs in colour.]

The author describes a non-pathogenic diphtheroid organism which occurs commonly in the milk of normal and abnormal udders. In smears of milk sediment or of cultures in milk a large proportion of these organisms are acid-fast, and may therefore be confused with the tubercle bacillus by the inexperienced worker. Details

Month of calving	*Jan.*	*Feb.*	*Mar.*	*Apl.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*All months*
Days between calving and next fertile service	92	90	88	79	76	89	91	96	135	127	103	102	97
Days + or — 85 days (*i.e.*, a time which would give a calf at the same time in the following year)	+ 7	+ 5	+ 3	— 6	— 11	+ 4	+ 6	+ 11	+ 50	+ 42	+ 18	+ 17	+ 12

are given of its morphological, cultural and biochemical properties. Cultivation of three strains of *C. ovis* and of one strain of *C. hofmannii* in milk media did not produce acid-fast forms.

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[A Study of Brucella Infection in Swine and Employees of Packing-houses. Huddleson, I. F., Johnson, H. W., and Hamann, E. E. (1933). *J. Amer. Vet. Med. Ass.*, lxxxiii, July, 1933, pp. 16-30.]

Although Brucella infection of pigs is apparently rare in this country, it is extremely common in the United States of America and is a source of infection to man. The authors record that of a total of 3,975 hogs slaughtered at two packing-houses in Michigan and examined by means of the whole-blood rapid agglutination test, 388 (7·74 per cent.) showed agglutinins in their blood. From 41 of those reacting, *Brucella suis* (Traum) was recovered from one or more tissues. It was possible to recover the organism in small numbers in heavily infected spleens after being in brine for a period of 40 days. Of 167 employees in packing-houses, as many as 10·7 per cent. showed agglutinins in their blood. The results from the re-testing of 18 employees in one packing-house, after the occurrence of a definite clinical case of undulant fever, suggest to the writers that when exposure to infective material takes place, the exposed develop active immunity or active infection.

Ll. E. W. B.

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[Studies of the Skin as a Portal of Entry for *BRUCELLA ABORTUS* in Pregnant Cattle. Cotton, W. E., Buck, J. M., and Smith, H. E. (1933). *Jour. Amer. Vet. Med. Ass.* N.S., Vol. 36, No. 1, July, 1933, pp. 91-100.]

The ability of *Br. abortus* of normal virulence to set up disease when introduced in sufficient amounts into the digestive or genital tracts of pregnant animals has been demonstrated repeatedly. The writers have previously shown, also, that when deposited in the conjunctival sac, even in comparatively small amounts, the organism will induce the disease. In the experiments now recorded it is indicated that the skin may also constitute a portal of entry for the infection. Four pregnant cattle were used to test the effects of the application of *Br. abortus* to a small area of the abraded skin, with the result that Bang's disease was conferred in all cases. The disease was also transmitted to ten of 16 pregnant cattle following the application of *Br. abortus* suspensions to small areas of the intact skin.

Ll. E. W. B.

[Some Cases of Undulant Fever of Bovine Origin. Nagallon, P., and Vidal, L. F. *Rev. Gen. Méd. Vét.* Vol. xlii, No. 497 (5 refs.)]

One of the authors, in a previous work, showed that bovines in an area where goats and sheep were affected with *B. militensis*, were likely to contract infection. Several cases of Malta fever in man investigated by other workers who obtained *B. militensis* from the blood of affected persons are described. Two investigations where four persons were affected were undertaken by the authors. One case with an agglutination titre of 1/1280 and a positive blood culture was found to have contracted infection from cow's milk. Guinea-pigs injected with the milk gave a high agglutination titre and a positive blood culture, the organism isolated being identical to the human strain. In another outbreak where three people were infected a similar procedure was carried out with identical results. They conclude that although *B. militensis* of bovine origin is rare in France, it does occur, and how far the condition is likely to spread in the future is a matter of conjecture.

D. W. M.

Report

COUNTY COUNCIL OF DURHAM

Report of the Chief Veterinary Officer for the Year 1932

The report for the year 1932 shows what valuable work can be rendered to the public by a well-organised county veterinary service. The administrative county area is divided into four portions and one veterinary officer is in charge of each inspectorate, working under the general direction of the Chief Veterinary Officer. After a short preamble the report virtually consists of two portions, the one dealing with the Milk and Dairies Acts and the other with the Diseases of Animals Acts and the various Orders made thereunder.

As showing the keenness of the Council, the food and drugs inspectors of the County Council took no less than 332 samples of milk for the detection of tuberculosis. In 20 of these and in four samples taken by officers of other local authorities, tubercle bacilli were found to exist. In the 24 complaints the veterinary staff were able, in 22 instances, to detect 26 tuberculous cows, all of which were immediately slaughtered under the provisions of the Tuberculosis Order, but we are not told what proportion of these had tuberculous lesions in the udder substance. In one case the offending cow had been detected and removed from the herd

by the veterinary staff before the report was received and in one of the two negative results the responsible cow was traced to a slaughter-house and evidence obtained that it had been affected with tuberculosis. The results of these investigations are remarkably satisfactory and we are also told that 17·2 per cent. fewer such complaints were received in 1932 as compared with 1931.

There are 24 herds licensed, under the Milk (Special Designations) Order, as Grade "A," which appears to be quite a large number for a county the size of Durham, but there are only two "Certified" and one Grade "A" (T.T.) licensed herds in the whole county. The Grade "A" herds are visited every three months by the veterinary staff and the cows examined, in addition to the usual quarterly examinations carried out by approved part-time veterinary surgeons. This system should make it almost impossible for tubercle bacilli to be found in the milk, although in three instances this did occur, but it was then found that the offending cows had all been diagnosed clinically and removed from the herds and slaughtered on the very day the samples had been taken, which proves what careful clinical examination of cows can achieve.

It is stated that there are 3,100 registered dairy herds in the county comprising approximately 27,000 animals and that during the year 4,025 visits were paid to farms and 38,851 clinical examinations of cows carried out. One must admit that it appears unfortunate that with such an adequate staff for the number of farms in the county many more routine visits are not paid and more frequent clinical examinations of the cows carried out, for the number of visits does not even average two per farm in the year. Nevertheless, as the direct result of the visits paid, 239 animals were detected and slaughtered under the Tuberculosis Order, 138 of which had disease of the udder. This indicates that the percentage of tuberculous cattle slaughtered during the year as the result of routine inspection, calculated on those actually examined, was: for udder tuberculosis, 0·35; for other scheduled forms, 0·61. The visits of the veterinary staff are made, as far as possible, along with the local sanitary inspectors and it is pleasing to read that they are appreciated by the farmers and that the class of cattle kept is improving as a result. This happy state of affairs has also been noted in other counties, too. A résumé of the conditions prevailing in the 44 sanitary districts of the county is given. Following on this inspection the veterinary staff have examined microscopically 701 samples of suspected material, 581 of which were of milk and 84 expectorates. Of these, 123 milks and 45 expectorates were found to contain tubercle bacilli.

Under the Diseases of Animals Acts we are informed that while there were ten confirmed outbreaks of sheep scab, only four sources of infection actually occurred, details of which are given. The staff were called upon to examine 19 suspected carcasses for anthrax, none of which, however, proved to be positive.

Under the Tuberculosis Order, 1925, 431 cattle were slaughtered and no less than 44·3 per cent. of these showed disease in the udder or were giving tuberculous milk. As previously recorded, 239 of these cattle were only found as the result of routine inspection. Special contracts were made with knackers for the disposal of the carcasses of the tuberculous cattle, one of whom gave £1 2s. 6d. and two others £1 per carcass. The contracts stipulated that the flesh of all animals destroyed should be boiled by the knackers and not disposed of locally, and no breach of these contracts was reported by the staff during the year. No mention is made, however, of the disposal of carcasses to butchers, and when it is considered that such a large proportion of the animals killed must have been in the early stages of the disease, it would appear that much of the flesh might have been utilised for human consumption under proper control, with advantage to the ratepayers and without any harm resulting to the public.

The report includes many carefully prepared tables showing the number of tuberculous animals detected and dealt with in the various districts of the county, the number of inspections made in markets and the number of investigations made under the Diseases of Animals Acts, and other details. Finally, one may mention some elucidating graphs showing the fluctuations in the numbers of animals slaughtered under the Tuberculosis Order during the last three years. The whole report is well printed and clear and should be read by all interested in veterinary public health.

D. S. R.

Blood is a very interesting tissue; washed red blood cells are a valuable therapeutic agent in certain conditions and plasma from healthy animals may be toxic even for the same species of animals. Plasma from chickens affected with a certain form of cancer is capable of producing cancer in healthy chickens, and white blood cells from chickens affected with one type of cancer reproduce cancer when injected into healthy birds. Certain it is that care and judgment should be exercised in the use of blood or any portion of it as a therapeutic agent.—*Vet. Med.*

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Much information on the world's wool production, as well as of cotton, silk, hemp, flax and jute, is contained in an Empire Marketing Board publication called "Fibres," obtainable from H.M. Stationery Office at the price of 6d. Russia has the largest number of sheep—121,200,000 head, Australia is next with 104,300,000, and the United Kingdom and New Zealand have each about 24,000,000 head.

INTERNATIONAL VETERINARY CONGRESS

MEETING OF THE PERMANENT COMMISSION

A meeting of the Permanent Commission of International Veterinary Congresses was held on May 20th, 1933, at the Bureau de l'office des Epizootics, Avenue Emile Acollas, Paris, when there were present: Messrs. Leclainche (France), de Blieck (Holland), Stang (Germany), Angheloff (Bulgaria), Braila (Roumania), Eichhorn (U.S.A.), Lignières (Argentina), Markowski (Poland), Nouri Bey Effendi (Turkey), Sanz Egana (Spain), and Sven Wall (Sweden), members of the Commission. Dr. G. Fluckiger (Switzerland), Messrs. M. Guetz (Yugoslavia), P. J. L. Kelland (England), G. Petersen (Denmark), Dr. F. Pfaff (Czechoslovakia), Dr. F. Gerlach (Austria), Prof. Dr. R. Manninger (Hungary), Prof. Dr. J. Nowak (Poland), and Dr. Ahmed Mohamed Rachad (Egypt), were also present.

Apologies for unavoidable absence were received from M. de Hutyra, the president, Sir John M'Fadyean (England), Messrs. Fardid Bey (Egypt), de Gasperi (Italy), Hilton (Canada), Holth (Norway), Jensen (Denmark) Parreiras Horta (Brazil), Rubay (Belgium), and du Toit (South Africa).

At the commencement of the proceedings, M. Leclainche, Vice-President, extended a cordial welcome to the representatives, expressing the personal pleasure he experienced in offering them hospitality during the session. He particularly welcomed Dr. Eichhorn, President of the Organising Committee of the New York Congress, who had come all the way from that city to participate in that meeting.

The Presidency.—The Vice-President, continuing, announced with profound regret the resignation of the President of the Commission, Dr. Hutyra. The latter's decision appeared to be irrevocable, based as it was on the President's serious state of health, which prevented him from being with them on that occasion. M. Leclainche added that he proposed, on behalf of the meeting, to send a telegram to Dr. Hutyra, expressing their very great regret at his absence, together with their cordial sympathy and hope for his early recovery.

Sir John M'Fadyean had tendered his apologies for absence, and had stated that he did not wish to be appointed the President of the Commission. His age prevented him from accepting the presidency, and his decision also appeared to be irrevocable, judging from the correspondence which had passed between Sir John and their General Secretary, M. de Blieck. M. Leclainche expressed, in their name, the regrets of the meeting, as it had been hoped that Sir John would have been able to accept the presidency.

M. de Blieck then rose to propose Prof. Leclainche as President of the Commission.

The proposition was passed unanimously.

M. Leclainche thanked the meeting for his election, stating that he fully appreciated the honour conferred upon him, and that he would endeavour to repay their confidence.

There then remained a vacancy for the Vice-Presidency.

Dr. Eichhorn proposed as Vice-President Dr. J. R. Mohler, Director of the Bureau of Animal Industry, Department of Agriculture, Washington.

The proposition was unanimously accepted.

Report.—The General Secretary now read his report, concerning the work of the Permanent Commission during the period August 9th, 1930, to May 20th, 1933. The report was approved, and will be sent to members.

The meeting now proceeded to the nomination of new members for Italy, Switzerland, Czechoslovakia, Yugoslavia, Denmark, and England, as follows:—

For Italy: Professor Dr. de Gasperi, Institute of Veterinary Medicine, Perouse (in the place of Professor P. Stazzi, Milan, who was unable to accept nomination).

For Switzerland: Dr. G. Flückiger, Director of the Federal Veterinary Office, Berne (in the place of Dr. M. Burgi, deceased).

For Czechoslovakia: Dr. F. Pfaff, Adviser to the Minister of Hygiene, Prague (in place of Professor F. Sevcik, deceased).

For Yugoslavia: M. Miloutine Guetz, President of the Yugoslavian Veterinary Association, Belgrade (in place of M. Cyrille J. Petrovitch, resigned).

For Denmark: M. Gerhard Petersen, Inspector of Veterinary Services, Copenhagen (in place of Professor C. O. Jensen, resigned).

For England: Mr. P. J. L. Kelland, M.R.C.V.S., Chief Veterinary Officer, Ministry of Agriculture and Fisheries, London, who replaces Dr. O. Charnock Bradley (resigned).

These nominations were accepted.

PROVISIONAL PROGRAMME OF SUBJECTS

The provisional programme of the New York Congress, 1934, proposed by the Bureau of the Permanent Commission, and the Executive Committee of America, was discussed by the assembly and amended in conformity with the wishes expressed by the National Committees in various countries.

After discussion, the provisional programme of subjects, as amended, was adopted as follows:—

General Meetings

As reporters to the general meetings there were appointed:—

Opening Meeting.

Professor Dr. E. Leclainche, Paris: "New plans for the combating of enzootic diseases under a State Veterinary Service."

Dr. J. R. Mohler, Washington: "Relationship of

Veterinary Science to animal breeding and public health. Legal protection of the practice of Veterinary Science."

Second General Meeting.

In the course of the week of the Congress there will be a second general session in which Professor Dr. Von Ostertag, Stuttgart, will give a paper on "Veterinary control of milk."

Dr. F. Gerlach, Modling (Vienna), and Professor Dr. R. Manninger (Budapest): "New researches on Filterable Viruses."

Professor Dr. Oluf Bang (Copenhapen), and Dr. W. E. Cotton (Bethesda Md., U.S.A.): "New Researches on Contagious Abortion. Bang's disease."

Meetings of Sections

I. *Pathology, Bacteriology and Contagious Diseases.*
1. Tuberculosis. (Eradication, immunity and protective inoculation.)
2. Foot-and-mouth Disease. (Specific preventive measures.)
3. Hog cholera. (Swine fever.) (Active immunisation.)
4. Anthrax. (New methods of protective inoculation.)
5. Gas-œdema diseases. (Etiology, classification and prophylaxis.)
6. Classification of the paratyphoid diseases.
7. Infectious anæmia of horses.
8. Lymphadenitis of sheep.
9. Mosquitoes as vectors of the virus of equine encephalomyelitis.
10. Active, immunisation of domestic animals against tetanus.

II. *Medicine, Surgery and Obstetrics.*
1. Parturient paralysis. (Milk fever.)
2. Sterility.
3. Diseases of young animals.
4. Infectious mastitis.
5. Recent progress in Veterinary Surgery.

III. *Veterinary Parasitology and Parasitic Diseases.*
1. Therapeutics of worm diseases.
2. Immunity against parasites.
3. Coccidioses.

IV. *Fowl Diseases.*
1. Fowl typhoid. (White diarrhœa in chickens.)
2. Fowl plague.
3. Coryza.
4. Psittacosis.
5. Fowl pox.
6. Leukæmia.
7. Neurolymphomatosis gallinarum.

V. *Tropical Diseases.*
1. The piroplasmoses. (Classification.)
2. Spirochœtosis.
3. African horse sickness.
4. Anaplasmosis.
5. Cattle plague. (Protective inoculation.)

VI. *Hygiene of Meat and Milk.*
1. Recognition of pasteurisation.
2. Unification of the methods of meat inspection.

VII. *Animal Breeding and Dietetics.*
1. Genetics.
2. Deficiency diseases.
3. Scientific principles of feeding.
4. The blood group question.

For the Sections, the national committees of many countries (South Africa, Germany, England, Argentine, Austria, Belgium, Brazil, Bulgaria, Denmark, Egypt, Spain, U.S.A., France, Hungary, Italy, Holland, Poland, Roumania, Sweden, Switzerland, Czechoslovakia, Turkey, U.S.S.R., and Uruguay) have proposed a large number of reporters, from which the Permanent Commission made a choice at this meeting.

The Executive Committee of New York has the right to revise this choice and to reduce the the number of reporters, but in such a manner that, wherever possible, reporters are chosen from different countries.

It was stated that many countries had omitted to put forward names of reporters; also that, at a later date, the Executive Committee of New York will communicate the names of the reporters to the members of the Permanent Commission, in order that they might be published in the veterinary press.

M. Pfaff asked that the Governments be informed of the holding of the Congress.

Dr. Eichhorn replied that invitations had been sent this year.

Travelling Facilities.—M. Braila requested Dr. Eichhorn to supply information concerning travelling facilities.

Dr. Eichhorn expressed his conviction that when the members of the Congress returned to their respective countries they would undoubtedly feel that they had been warmly welcomed, and that all possible had been done to make their stay a pleasant one. They would be staying at the Waldorf Astoria Hotel, which was the largest in the world. As it was very important that the members of the Congress should see other places in the United States, besides New York, inexpensive excursions would be organised if possible; moreover, there was no need for apprehension concerning the expenses of ocean travel. American companies' boats, which touched at all the principal ports of Northern Europe, had a "Tourist Class," in which very comfortable cabins, with bathrooms, might be obtained for 180 dollars. There would inevitably be differences between various boats, but costs would be found to be reasonably consistent. M. de Blieck was well informed regarding the different companies, and delegates of every country would be well advised to correspond with him in order that he might know how many would be going

to America. There were companies whose boats called at Hamburg, Cherbourg, Rotterdam, and Southampton. Thus a large number of the European delegates would be able to take the same boat.

"*Official Languages.*"—M. Leclainche rose to say that Professor de Gasperi had stated that Italy would remain in the Congress, and desired to propose that Italian should be chosen as an official language of the Congress.

M. de Blieck added that Spanish had been proposed by America, but only for the New York Congress; if that proposition were adopted, it did not follow that Spanish need be considered an official language of European Congresses. The Italians asked that Italian might become an official language as it had been in London. Previously English, German, and French had been the official languages.

M. de Blieck went on to say that the choice of languages would not rouse any national feelings. There remained the question of whether or not all languages might be admitted. That was obviously impracticable. In increasing the number of languages, the expense of translation and printing would be considerable, and might become so great that some countries might be unable to afford the expenses of a Congress. He added that M. de Gasperi's absence was unfortunate, as he was unable to explain to the meeting the reasons for his proposal.

Dr. Eichhorn said that it was absolutely impossible for America to adopt Italian as an official language, owing to the state of finance in that country.

M. Stang suggested that Italians wishing to address the assembly might be permitted to speak in Italian.

M. de Blieck replied that nothing prevented them from doing this.

M. Leclainche then proposed that Mexican should be adopted, and this language was decided upon. He also suggested that Dr. José Figueroa, the head of the Mexican Animal Industries' Bureau, should be chosen as the Mexican representative. This proposal was also adopted.

Subscription.—The subscription for members was fixed as being five dollars for veterinarians, and one dollar for ladies and students.

The President thanked members for their presence, and for their collaboration.

The meeting then closed.

E. Leclainche, *President.*
L. de Blieck, *Secretary.*

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A Message from Dr. von Hutyra

In connection with the reference contained in the foregoing to the resignation from the Presidency of the Permanent Commission of Professor Dr. F. von Hutyra, by reason of ill-health, we reproduce extracts from a letter recently received by Dr. F. Bullock, Secretary of the Royal College of Veterinary Surgeons, in response to an expression of sympathy with him in his illness addressed by the latter to Dr. Hutyra.

"I am, in fact, and have been for nine months, very ill with heart trouble, and am in a university clinic and sanatorium. I have been compelled to give up all work, and although just now I am somewhat better, a complete recovery is not to be hoped for. I have therefore resigned from my position as Professor and will also retire from the different honorary posts I hold, as I have done from the Presidency of the Permanent Commission of International Veterinary Congresses. I feel it hard, after 50 years of activity, to have to do nothing but rest, and to give up the hope of seeing once again the many kind colleagues and friends I have learnt to know and treasure. . . . .

"Whilst thanking you once again for your great kindness, I ask you to give to my English colleagues, and especially Sir John M'Fadyean, my best greetings—who all, I hope, will keep me in good remembrance."

All our readers will join with us in extending profound sympathy to Dr. Hutyra, and in deploring the circumstances which have deprived veterinary science—temporarily, we devoutly hope—of the services of one of its ablest and most renowned devotees.

. . . . .

Particulars of Travelling Facilities, Accommodation, Costs, etc.

As we go to press with the above report, we are favoured by Dr. A. Eichhorn, Chairman of the Organising Committee of the Congress, with the following notes:—

Steamship Arrangements.—The United States Lines have been chosen as the official company for reasons well known to the Commission. The Company has quoted the winter rate, and in tourist class on the s.s. *Washington* or s.s. *Manhattan*, the round trip rate is from Cobh $182.00, Southampton $182.00, Havre $185.00, Hamburg $193.00. The general passenger agent of the lines will communicate directly with representative Veterinarians in various countries advising them of the services they intend giving to those who use their vessels.

Hotels.—The management of the Waldorf Astoria Hotel, in New York City, which is the headquarters of the Congress for 1934 meeting, has placed at our disposal a most ideal arrangement. They have made concessions in their rates for foreign visitors attending the Congress, and it is the desire and hope of the Committee on local arrangements, that all visitors from other countries will utilise the facilities arranged for at the Waldorf Astoria. We are fortunate, indeed, to have as headquarters the largest and best-equipped hotel in the world. Due to the concessions made by the Waldorf Astoria it will be

possible for delegates from foreign countries to be taken care of very reasonably. The room rate is:—

One in a room $4.00 per day.

Two in a room with twin beds $3.50 per day each.

All rooms are equipped with private bath.

The restaurant facilities in the most moderately priced of its three dining rooms, *viz*, "The Savarin," make it possible for one to dine well at a very reasonable rate. Breakfast, luncheon and dinner may be obtained for $2.35, making the entire hotel expenditure less than $6.50 per day.

Hence $350 is ample for European visitors to attend the Congress, and be well looked after while so doing.

In the event of visitors desiring a lower rate, this can be arranged for (by the Committee for Local Arrangements) in nearby hotels, as low as $2.50 per day. Visitors from abroad, however, are urged to arrange to take their room accommodations in the Waldorf Astoria Hotel, inasmuch as we can better guarantee the services.

Below is a tentative summary, estimated on a two weeks' stay in New York.

	Tourist class from	Two weeks hotel expense 1 in a room at Waldorf Astoria	Meals for same period	Total
Cobh and return	$182.00	$56.00	$32.90	$270.90
Southampton and return	$182.00	$56.00	$32.90	$270.90
Havre and return	$185.00	$56.00	$32.90	$273.90
Hamburg and return	$193.00	$56.00	$32.90	$281.90

The railroad fares from various points in other countries to ports of departure *via* steamship can be added to the above schedule.

Most important for visitors: Make steamship and hotel reservations early. Make *all* hotel reservations through Committee on Local Arrangements, c/o Waldorf Astoria Hotel, New York City.

In the very near future you will be advised as to the exceedingly small cost for which a short tour can be made after the Congress. This tour will embrace: Visit to Cornell University at Ithaca, N.Y., with inspection of the Veterinary College; thence to Niagara Falls, returning to Buffalo; boat trip on Lake Erie to Detroit, thence to Chicago, where the world famous stock yards and abattoirs will be seen; thence to Washington, D.C., for the pleasure of seeing the capital of the United States; thence to Philadelphia, Pa., to visit the University of Pennsylvania, and its Veterinary Department; then back to New York City.

Many short excursions are being planned, without cost to the visitors, to such points as the famous Walker-Gordon Farms with their unique rotary milking platform; the United States Military Academy at West Point, N.Y., boat rides around the city of New York on the Hudson, East and Harlem rivers, as well as New York Bay and Long Island Sound.

For the ladies an elaborate plan is being formulated, which will include visits to the Museums of Fine Arts and Natural History, Radio City, and many interesting sight-seeing excursions along the Hudson River and through various scenic parkways in the immediate environs of New York City.

We are desirous of making this the largest and most successful Congress ever held, and trust that we will be able to do so.

N.V.M.A. Divisional Report

VETERINARY MEDICAL ASSOCIATION OF IRELAND*

PROVINCIAL GENERAL MEETING AT CORK

A Provincial General Meeting of the Veterinary Medical Association of Ireland was held on July 15th, 1933, in the Victoria Hotel, Cork, at 12 a.m.

The following members were present: Mr. T. R. Mulcahy (President), Professor J. J. O'Connor, Messrs. J. F. Healy (Midleton), J. J. O'Brien (Claremorris), T. O'Leary (Macroom), M. F. O'Sullivan (Midleton), P. R. Carroll (Limerick), C. P. Hynes (Lismore), T. I. Alexander (Kinsale), R. P. Byrne (Dungarvan), R. A. S. Coulter (Roscrea), E. McSwiney (Cork), S. Hyde (Cork), P. F. Dolan (Dublin), H. T. Ryan (Cork), Denis Brophy (Clonakilty), C. Lucey (Macroom), J. R. Carey (Cork), N. Nicolson (Cork), J. Daly (Cork) and J. S. MacCann (Tullamore).

The President announced that the minutes of the previous General Meeting would be brought forward for signature at the General Meeting in August.

Correspondence. — The correspondence included:—

(1) Apologies for absence from Messrs. P. J. Howard, J. Condon, S. R. J. Cussen, A. A. Donnelly, Professor Craig, Professor Browne and Professor Kearney.

(2) A letter from Mr. P. Dolan suggesting that the Veterinary Medical Association of Ireland should ask the Pig Industry Tribunal to accept evidence from veterinary surgeons appointed for the purpose by the Veterinary Medical Association of Ireland.

It was proposed by Mr. Brophy, seconded by Mr. Healy and passed unanimously, that the Hon. Secretary write to the Secretary of the Tribunal asking them to accept evidence from Messrs. P. Dolan, S. R. J. Cussen and J. J. Dundon.

* Received for publication August 4th.

Paper.—Mr. C. P. Hynes, m.r.c.v.s., Lismore, read his paper on "Bovine Surgery." [This paper is reproduced at the commencement of this issue.—Ed., *V.R.*]

Discussion.—The discussion was opened by Mr. McSwiney and maintained by Messrs. O'Brien, J. S. MacCann, J. Daly, T. O'Leary, J. F. Healy, T. I. Alexander, S. Hyde, M. F. O'Sullivan, Denis Brophy, H. T. Ryan, the President and the Hon. Secretary.

The President, before calling upon Mr. Hynes to reply, complimented him on the excellence of his paper.

Votes of thanks to Mr. Hynes and the President concluded the proceedings.

J. J. O'Connor, *Hon. Secretary.*

THE BRITISH ASSOCIATION

The opening meeting of the British Association for the Advancement of Science was held at Leicester, on the evening of September 6th, when the presidential address was delivered by Sir Frederick Gowland Hopkins, on "Some Chemical Aspects of Life." His special theme was the importance of molecular structure in determining the properties of living systems, but he emphasised that, while at a definite and recognisable level of its dynamic organisation an organism could be logically described in physico-chemical terms alone, there might be yet higher levels calling for discussion in quite different terms. He concluded with a survey of the larger aspects of biological science.

Unanimous approval was given to the council's selection of Sir William Hardy as President of the Association for next year, when the meeting will be held in Aberdeen. Sir William Bate Hardy was for some time secretary of the Royal Society, and is at present Director of Food Investigation at the Department of Scientific and Industrial Research. He is a distinguished Cambridge physicist.

We reproduce below summaries of discussions, presenting features of special interest to our readers, which took place at the Sectional Meetings.

The Nature and Origin of Life

Dr. J. Gray, a leading experimental zoologist, in his presidential address to the Section of Zoology, discussed, and decided against, the mechanical view of the nature and origin of life.

"Each year," he said, "it becomes more difficult to review the progress which is being made in the diverse fields of modern zoology, for as individuals we are necessarily specialists, and we tend to forget that the greatest contribution which zoology has ever made to human thought was not the result of a specialised inquiry. The concept of organic evolution was, on the contrary, a brilliant process of integration from every branch of the subject, which spread its effect far beyond the confines of zoology itself.

"Although it is impracticable to review, even in the most general terms, the progress of the science as a whole, it is perhaps possible to take stock of one particular branch of the subject and to discuss its contributions towards problems which are of some general scientific and human interest. To an increasing extent, experimental zoologists are borrowing the weapons of physical chemistry, and possibly the time has come to consider the general point of view which underlies this type of attack on zoological problems. What is our conception of the essential nature of the living organism? Do we believe that the activity of living matter and its potentiality for change can be expressed adequately in terms of physical units? Do we incline to the belief that living animals have been evolved from inanimate matter?

"When, as biologists, we are asked to define our conception of the nature or origin of living matter, we must confine ourselves to views which are based on the facts of observation. The more accurate and extensive are our observational data, the more precise and the more satisfying will be our conclusions. The material with which the biologist must deal is of extreme diversity and complexity, and we naturally turn to the physical world for standards of measurement which will help us to arrange our material and to place our observations in a reasonable relationship to each other.

"As I understand it, the age-long discussion between the mechanistic and vitalist schools of thought turns on how far we believe—on the basis of observation—that the facts of biology can be sorted out into an harmonious and satisfying series without invoking conceptions which are found to be unnecessary in dealing with the facts of observation within the physical world.

"The centre of gravity of the problem shifts from time to time, but for many years two concepts appear to have influenced the discussion to a marked extent. First, the synthesis of organic compounds from inorganic material suggests that there is no fundamental difference between the type of substances found in or made by living organisms and those which are found in or formed by purely inorganic systems. Secondly, the inferences drawn from the theories of organic and terrestial evolution suggest that these two processes are fundamentally similar and involve the operation of fundamentally comparable forces."

Summarising his view, the President said:—"The only laws which physics has provided for an analysis of biological phenomena rest on a statistical basis; they only apply to systems which contain a large number of participating units and only describe natural phenomena in terms of probability and not of absolute truth. If we accept these laws as a means of describing the behaviour or the structure of an organism, we must accept the conventions attached to the laws and agree to ignore such events as are improbable although they may conceivably occur.

"From this point of view the spontaneous origin of living from inanimate matter must be regarded as a highly improbable event, and as such can be assumed not to have occurred. Similarly, the development of an organism from so-called undifferentiated protoplasm involves processes which are entirely without parallel in inanimate nature. So long as this state of our knowledge persists, it is dangerous to assume that the statistical laws of physics can satisfactorily describe all biological events.

"Our knowledge of the physical and biological properties of living matter suggests that the

fundamental unit of structure is extremely small, and that it contains potentialities for change which are unique in the universe. These properties we must accept as fundamental axioms of our science which may or may not prove (in the future) to have their parallel in the physical world.

"It may seem presumptuous for the biologist to set up postulates peculiar to his own sphere; it would be more fitting perhaps for him to accept, with medieval humility, the assumptions of his physical brethren. One wonders, however, at times whether the concepts of intrinsic organisation and of emergent evolution are entirely absent from modern physics. Even if this is not the case, we can fortify ourselves by the knowledge that physics has from time to time changed its fundamental assumptions with advantage to itself and to the world.

"Those biologists who are inclined to accept the views I have ventured to put forward may be encouraged by the remark of Professor Niels Bohr which very recently came to my notice. He says: 'The existence of life must be considered as an elementary fact that cannot be explained, but must be taken as a starting-point in biology, in a similar way as the quantum of action, which appears as an irrational element from the point of view of classical mechanical physics, taken together with the existence of the elementary particles, forms the foundation of atomic physics.'"

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The Musk-Rat

In the Zoology Section, Mr. M. A. C. Hinton dealt with the problem of the musk-rat.

He described the range of the rodent in North America, and said that since its introduction into Bohemia from Alaska in 1905 it had multiplied in population, until Central Europe was completely overrun. Importations had taken place to England between 1927, if not earlier, and 1932, and many hundreds, and possibly thousands, were brought into this country during that period. They were distributed to 200 centres in different parts of Great Britain, and there had been escapes from musk-rat farms even where the greatest precautions had been taken to guard against their release. There were now serious infestations in Shropshire and in parts of Sussex and Surrey. The conditions in Great Britain, he said, were more favourable, in average years, to the musk-rat than any other country.

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The Nervous System: Rhythmic Activity

Dr. E. D. Adrian, Foulerton Research Professor of the Royal Society and Nobel Prizeman, addressing the Section of Physiology from the presidential chair, said that the work of experimental embryologists, chiefly on the larvæ of amphibians, had shown an unexpected plasticity in the development of the nervous system, depending not so much on the innate properties of particular cells as on the environment, natural or experimental, provided by the rest of the organism. The new work, as well as the old, had shown that the nervous system consisted of "neurones," cells with thread-like extensions, all cast in the same mould, but shaped differently by the forces of development.

They all seemed to do their work in the same way. Their activity was in some respects remarkably simple. It was essentially rhythmic; a series of rapid alternations between the resting and the active state, due probably to rapid breakdown and repair of the surface. This was a fair description of the way in which nerve fibres carried their messages, and the same kind of pulsating activity could be detected in the nerve cells of the brain.

So far as the units were concerned, the prospect was encouraging, but difficulties arose when they came to consider the work of the nervous system as a whole. For one matter it was becoming clear that too much stress had been laid on exact localisation of functions in the cortex of the brain. The difficulties were greatest when the reactions involved learning and memory, or in other words, habit formation and conditioning. There were now known a very large number of cases in men and animals in which actions clearly did not depend on particular neurones, but on those which were called on to take up the duty.

The major problems of the central nervous system were left even in greater obscurity by the new knowledge. But, the President summed up, "No one can observe these ceaseless electrical pulsations without realising that they provide a fresh set of data and may give a fresh outlook on the working of the brain. The facts are still too uncertain to be worth treating in greater detail. But they accumulate rapidly, and several lines of evidence seem to lead in the same direction. For the present it is enough to state our problem, that of the organisation of neurones into the nervous system. It is still a physiological problem, and I hope that a solution will be found on physiological lines. If it cannot be found it will be extremely interesting to see where the breakdown occurs, and if it can it will be even more interesting to see what light it throws on the relation of the nervous system to the mind."

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The Origin of Land Vertebrates

This subject was dealt with by Professor Watson, F.R.S., of University College, London, in a fascinating discourse, during which he traced the origin back to the Devonian and Silurian geological epochs, when, as was clear from the evidence of the rocks, there were conditions of great aridity with alternating flooding and drying of streams and lakes. The ancestors of the cartilaginous fishes remained in the sea, and had no occasion to change their mode of obtaining oxygen.

The three groups of bony fish now represented by the lung-fish, the ordinary bony fish, and the Polypterus-like fish were all inhabitants of fresh water, and when the streams became stagnant and began to dry up they had to resort to air breathing. There was abundant evidence that the swim-bladder which most modern fish possessed was originally an air-breathing organ and was the origin of the lungs of all air-breathing animals. In many modern fish it had lost this primitive function and had become an hydrostatic organ to enable the fish, which was heavier than water, to keep afloat or to ascend from depths where the pressure was greater, a function which is carried out by secreting oxygen from the blood into the air-bladder in exact proportion to the pressure of the water at different depths.

Professor Watson described the ancestral types of fish which were the common ancestors of mammals, reptiles, and amphibians, and showed how repeatedly a type of head, cylindrical in section, with a single cardyle and very thick base, had been flattened, its base thinned and the single cardyle replaced by two in accordance with the habits of the animals. He said that probably all the amphibians had originally been

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purely aquatic, and had used the primitive air-bladder as an accessory to their true gills, but that some had become terrestrial, changing their structure in accordance with their new environment.

Of these, some, like the gigantic labyrinthodonts, had ultimately perished; some, like the frogs and toads, had remained amphibian, and others, like the urodeles, had returned secondarily to the water, some of them dropping out the land stage altogether. The external gills, which had been thought an ancestral character, were undoubtedly comparatively late adaptations, and were instances, not of autogeny repeating phylogeny, but of true larval organs being carried over into adult life.

(To be continued.)

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Sept. 18th-22nd.—N.V.M.A. Congress, Llandudno.

Sept. 21st.—Meeting and Luncheon of the Royal (Dick) Veterinary College Alumnus Association, at the Royal Hotel, Llandudno.

Sept. 25th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4.30 p.m.

Sept. 25th-26th.—R.C.V.S. Jubilee Memorial and Bursary Prize Examination.

Oct. 4th.—R.C.V.S. Committee Meetings.

Oct. 5th.—R.C.V.S. Registration Committee.

Oct. 6th.—R.C.V.S. Committee and Council Meetings.

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WHOLE-TIME OFFICER FOR CÆRNARVONSHIRE

"During the course of next year," says the County Councils Association Official Gazette, "it is the intention of the Cærnarvonshire County Council to institute a scheme for the inspection of dairy cows, under the Milk and Dairies Order, 1926, by a whole-time officer specially appointed for the purpose. Hitherto the duties falling to be discharged by the Council under the Contagious Diseases of Animals Acts and the Tuberculosis Order have been performed by part-time veterinary officers at a cost of approximately £300 per annum, but it is realised that the work is increasing. The new proposals will involve an annual expenditure of about £725 to £775 per annum, including the salary of the officer, examination of samples, and travelling expenses. There are in the county approximately 800 herds of cattle, from which milk is sold to the public, while the total number of cows is 6,500."

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PERSONAL

Appointment.—Captain S. H. Whitworth, M.R.C.V.S., late Veterinary Pathologist, Gold Coast, has been appointed Director of Veterinary Research and Veterinary Adviser, Malaya.

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Marriages.—Burrow—Ducksbury.—Mr. Harold Burrow, M.R.C.V.S., D.V.S.M., and Miss Olivia Ducksbury, were married on Thursday, September 7th, at St. Paul's Church, Scotforth, Lancaster. The Rev. D. Birney (Vicar) officiated and Dr. G. B. Brook, of Derby, was best man.

The bridegroom, who is the Chief Veterinary Officer for Birkenhead, qualified in 1926 at the Royal (Dick) Veterinary College, where he gained both the Walley and the Fitzwygram prizes.

The bride is the only daughter of Mr. O. A. Ducksbury, M.R.C.V.S., a well-known veterinarian who has practised in Lancaster for some 45 years.

Scott—Whitworth.—At Egremont Presbyterian Church, Wallasey, on September 6th, 1933, by the Rev. Erskine Blackburn, M.A., Walter Scott, F.R.C.V.S., D.V.S.M., only son of Mr. and Mrs. W. M. Scott, 3, Inverleith Gardens, Edinburgh, to Joan Lilian, only daughter of Mr. and Mrs. Harold Whitworth, Loretto, Breck Road, Wallasey.

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Colonial Veterinary Service Leave

The following veterinary officers of the Colonial Veterinary Service are now on leave: Messrs. M. H. French, Biochemist, Veterinary Department, Tanganyika; A. Fulton, Veterinary Officer, Gold Coast; A. G. Gowan, Stock Inspector, Veterinary Department, Tanganyika; R. L. L. Hart, Senior Veterinary Officer, Uganda; T. F. O'Brien, Veterinary Officer, Nigeria; R. J. Roe, Chief Veterinary Officer, Cyprus; J. M. Smith, Chief Veterinary Officer, Palestine; Captain R. C. Wheeler, Senior Veterinary Officer, Kenya (retiring).

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New Veterinarian J.P.—The list of veterinarian Justices of the Peace has been augmented by the name of Mr. William Wallace Peggie, F.R.C.V.S., of Biggar, Lanark, who farms at Campshead, Crawford, and who is now numbered amongst the 84 Justices for the County of Lanark.

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Will.—Mr. Alfred Moritz Michaelis, of Manor Road, Bramhall, formerly of Tiviot Dale, Stockport, veterinary surgeon, left £19,183 (net £14,375). He left all of his property to his daughter.

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Mr. W. P. Blount, F.R.C.V.S., of the Poultry Health Laboratories, Moulsford, Berks., has been appointed Joint Honorary Poultry Pathologist to the National Laying Test, and Honorary Poultry Pathologist to the New Laying Test, which is being held under the auspices of the Royal Agricultural Society.

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LONDON AND HOME COUNTIES TRAFFIC ADVISORY COMMITTEE

Sir John Moore to Represent the Horse-user

The Secretary to the Ministry of Transport announces that the London and Home Counties Traffic Advisory Committee has been reconstituted in accordance with the provisions of section 58 of the London Passenger Transport Act, 1933, and the twelfth schedule thereto.

It is gratifying to note that among those appointed to serve on the Committee (until June 30th, 1936) is Major-General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S.

The Minister of Transport informs Sir John that his appointment was made after consultation with bodies representative of the interests of persons providing or using horse-drawn road vehicles within the London traffic area, and after consideration of representations made to him. The Minister expects to be in a position to summon the first meeting of the reconstituted Committee early in October.

COUNTY COUNCILS ASSOCIATION AND LIGHT HORSE BREEDING

At the last meeting of the Executive Council of the County Councils Association the following resolution, passed by a special Sub-Committee of the Agricultural Committee, was adopted: "That the Sub-Committee are in full agreement with the view that the present position of this matter is one of grave concern. They are therefore of the opinion that further representations should be made to the Ministry of Agriculture and Fisheries on the subject, and that a copy of the correspondence should be sent to the War Office, with a request that steps be taken by them to secure the renewal of the grants previously made."

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MILK MARKETING SCHEME

It is announced that the Milk Marketing Scheme will, following upon the vote of milk producers' so overwhelmingly in its favour, almost certainly come into operation on October 6th of the present year.

Mr. S. Foster, general manager of the London Co-Operative Society, Limited, has been appointed general manager to the Milk Marketing Board, and will take up his new duties at an early date.

The Milk Marketing Board, whose work has hitherto been conducted from the headquarters of the National Farmers' Union, 45, Bedford Square, W.C.1, has moved to its permanent offices at Thames House, Millbank, S.W.1. All communications intended for the Board should be sent to that address.

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ARMY VETERINARY SERVICE

A War Office announcement (*London Gazette*, September 8th) gives the names of officers brought to notice by Field-Marshal Sir Philip W. Chetwode, Commander-in-Chief in India, for distinguished services rendered during the military operations in connection with the Chitral Reliefs, period September-October, 1932. Amongst these appears the name of Major P. S. Sparling, R.A.V.C.

London Gazette—War Office—Regular Army

September 12th.—The follg. Lts. (on prob.) are confirmed in their appts.: J. D. Daly, J. Clabby, J. A. Langley, F. L. Cundell, I. McLaren.

Territorial Army

September 8th.—Captain W. H. Wortley to be maj. (July 23rd).

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SHEEP SLAUGHTER PROSECUTION

In the Dublin District Court on Monday, Messrs. O'Neill, Ltd., victuallers, of Dublin, were summoned by the R.S.P.C.A. for allowing 13 sheep to be terrified by permitting other sheep to be slaughtered in their sight. Professor J. F. Craig, M.R.C.V.S., Principal of the Veterinary College of Ireland, expressed the opinion that there was no cruelty, as one sheep seeing another slaughtered was incapable of reasoning that it would itself next suffer a similar operation. The sheep was one of the least intelligent of domestic animals. The Judge dismissed the summons on payment of costs.

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WORLD'S POULTRY CONGRESS

The fifth International Poultry Congress which was held in Rome last week, was attended by 1,000 delegates, representing 42 States.

DOGS IN GERMANY

Hitherto there have been two societies in Germany exercising supervision over shows, known as the Kartell and the Delegierten Commission. A third was interested in the promotion of field trials. The Government has now intervened, and the three will be merged into the Sportfachverband, or Sports Department Association. By a system of decentralisation 15 specialist bodies have been set up, with headquarters in Berlin.

A further sign of the awakened national feeling in Germany is the decision of the German Shepherd Dog Club to forbid any of their judges to officiate in countries in which the breed is not called the German Shepherd Dog. As Great Britain still adheres to the name Alsatian it will not be possible for German judges to take part in our shows. In conveying this intimation to the Kennel Club the hope is expressed that the name of the breed will be changed. A good many British exhibitors have been in favour of the change, but the movement will be weakened by this attempt at excommunication.

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PRUSSIAN PREMIER AND "VIVISECTION"

The Berlin correspondent of *The Times* states that General Göring, as Premier of Prussia, recently forbade vivisection in Prussia and undertook to put anyone practising it hereafter in a concentration camp. "Much praise was given in the Press to the humane motive underlying this order," says the message, "but the scientific world was apparently taken aback and there were hurried discussions to establish what was and what was not forbidden.

"It is now announced that pending the enactment of an Animal Protection Act vivisection is to be defined as the dissection of, or operations on, a living unnarcotised animal in cases where anæsthetics are used for similar operations on the human body and in cases where the use of anæsthetics is feasible.

"'As serious scientific research in the interest of maintaining health and life cannot dispense with scientific experiments with animals, these experiments will not be regarded as vivisection if the following rules are followed: Scientific experiments with animals may be made in scientifically conducted institutions under the supervision of their heads only if scientific considerations promise definite success. They must be omitted if the question at issue had already been cleared up. They are to be made painless by general or local narcotics.'"

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SCHEDULED DISEASES IN SUFFOLK

At a meeting of the Suffolk Diseases of Animals Joint Sub-Committee, the District Inspector of the Ministry of Agriculture (Captain Boyle) stated that the origin of the recent outbreak of foot-and-mouth disease was not apparent.

A very satisfactory report on swine fever was presented. The Clerk stated that reports received during the quarter numbered 213, of which none were confirmed. Fifteen were awaiting determination. There was only one existing case, and that was in West Suffolk, at Whepstead.

Since the last quarterly meeting (June 6th) 16 cases of suspected tuberculosis had been reported under the Tuberculosis Order, 1925, and 200 animals examined and dealt with by the Committee's veterinary inspectors. Two cases were awaiting determination. Ten cases had been confirmed, affecting twelve animals. The total value of the animals slaughtered was £78 10s.,

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and the compensation to the owners amounted to £21 5s. The amount collected to date in respect of salvage of carcasses after allowing for expenses of slaughter was £5 7s. 6d.

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HIGHLAND CATTLE.

"Within the past few years there has been a radical change in the live stock industry in the Western Isles," says the *Scottish Farmer*. "Whereas the ancient breed of Highland cattle used to flourish, now they have all but disappeared, their place being taken by a mongrel race, largely due to the fact that quicker results were desired than the indigenous breed was able to supply. The change has not been to the advantage of the islands; breeding has to a large extent been discontinued and in many instances large numbers of calves are purchased for rearing instead of being bred. The days of the Highland breed are not yet over, however, and for continuity in breeding in these exposed islands it provides the best foundation. A tour through the islands provides some evidence that there is a slight reversion in favour of the Highlander. Both in its purity and crossed with the Shorthorn there is a place for the ancient breed. Both in Islay and Mull the Highlander is still a favourite, and long may it continue."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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ROTARIANS AT LLANDUDNO CONGRESS

To the Editor of the Veterinary Record

Sir,—If there are any Rotarians amongst the members of the N.V.M.A. attending the Llandudno Congress, the writer will be very pleased if they will make themselves known to him. He also wishes to draw their attention to the fact that the Llandudno Rotary Club meet on Tuesday, 1 p.m., at the Imperial Hotel. This would afford a good opportunity of making each other's acquaintance.

Yours truly,
H. Llewelyn-Jones,
Past President, Denbigh Rotary Club.

Staying at St. George's Hotel,
Llandudno.
September 9th, 1933.

The Editor acknowledges, with thanks, the receipt of the following:—

Report of the Summer Meeting of the Mid-West and South Wales Division, N.V.M.A., from Mr. C. E. Perry, Hon. Secretary.

Communications from Messrs. J. R. Cunningham (Prince Edward Island), H. G. Lamont (Belfast) and E. C. Lloyd (London).

ADVERTISER'S ANNOUNCEMENT

Dog Insurance

Considerable interest has been aroused in the activities of the Canine Insurance Association, Ltd., which provides an entirely new type of insurance for dogs.

The Association does not pretend to cater at the moment for the valuable pedigree animal, but the policy it issues to cover the household pet fills a need that has long existed.

Professor Sir Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E., in writing to the Association, summed up the scheme when he said "I feel sure that you are meeting a long felt want, in having successfully solved the problem of insuring the thousands of dogs for a small annual premium against accident or loss; also by giving them the benefit of qualified veterinary advice and attention, if necessary."

A matter of this kind is, of course, of more than passing interest to members of the Veterinary Profession, as, in the course of the Association's business, it deals with thousands of dog owners and the effect must be to divert to the qualified practitioner cases of injury that would be otherwise dealt with.

The address of the Association is 57, Gracechurch Street, London, E.C.3, and Sir John Moore, K.C.M.G., C.B., F.R.C.V.S., is the Chairman of Directors.

The Association makes an announcement in your advertising pages this week, and it will be represented at the Exhibition to be held in connection with the Llandudno Congress.

Diseases of Animals Acts, 1894 to 1927
SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 31st August, 1933	8	10	4	690	7	7	15	46	29
Corresponding period in									
1932	5	6	—	—	3	3	18	27	13
1931	19	25	11	1,432	2	2	12	65	40
1930	7	9	—	—	2	2	11	68	45
Total 1st January to 31st August, 1933	192	218	62	6,049	109	185	239	1,016	618
Corresponding period in									
1932	251	309	6	562	99	159	164	1,207	598
1931	338	380	90	9,910	106	173	207	1,314	551
1930	256	281	—	—	167	253	283	1,702	719

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.